

Distractions in Everyday Driving



Jane Stutts, Ph.D.
University of North Carolina
Highway Safety Research Center

Phase I – Analysis of National Crash Data

THE ROLE OF DRIVER DISTRACTION IN TRAFFIC CRASHES

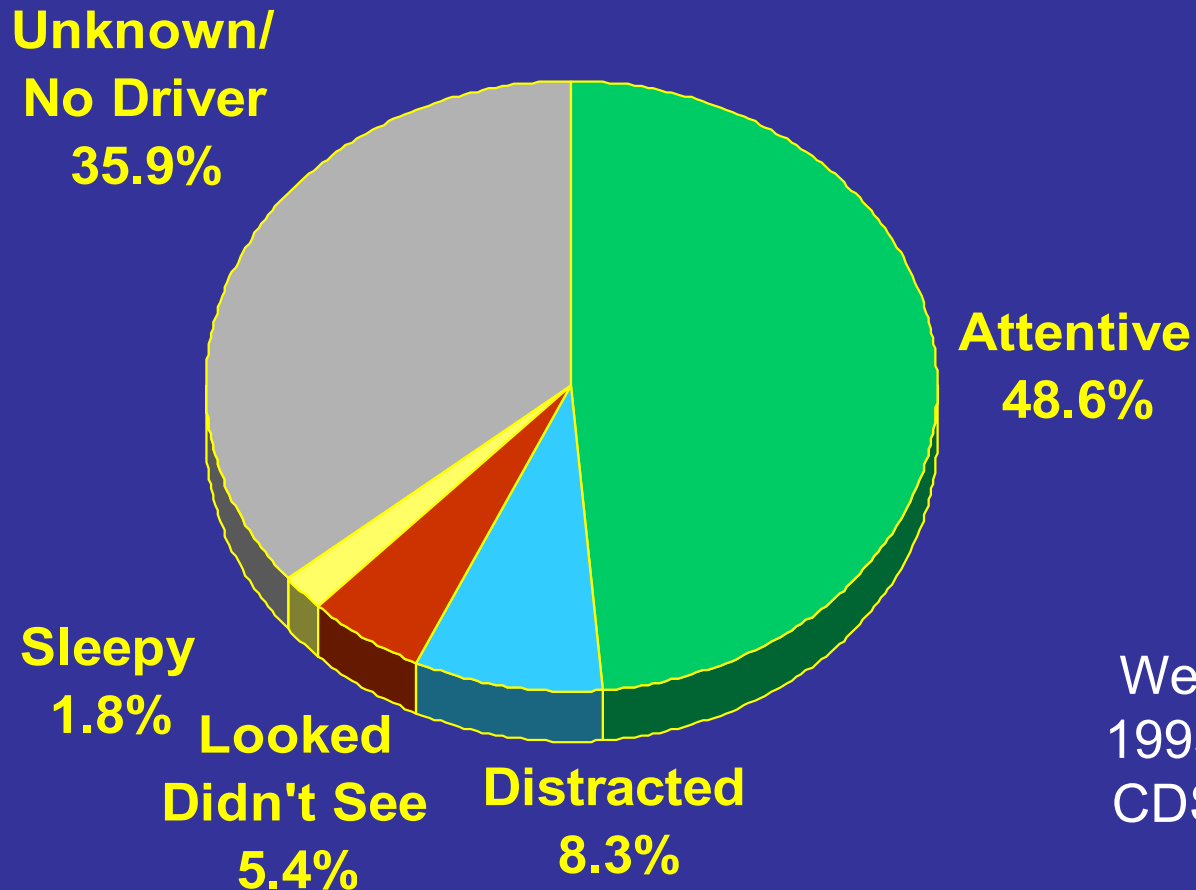


Prepared by
Jane C. Stutts, Ph.D.
Donald W. Reinfurt, Ph.D.
Loren Staplin, Ph.D.
Eric A. Rodgman, B.S.
University of North Carolina
Highway Safety Research Center
Chapel Hill, NC

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AAA Foundation for Traffic Safety
1440 New York Avenue, N.W., Suite 201
Washington, DC 20005
202/638-5944
www.aaafoundation.org

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Driver Attention Status of Crash-involved Vehicles



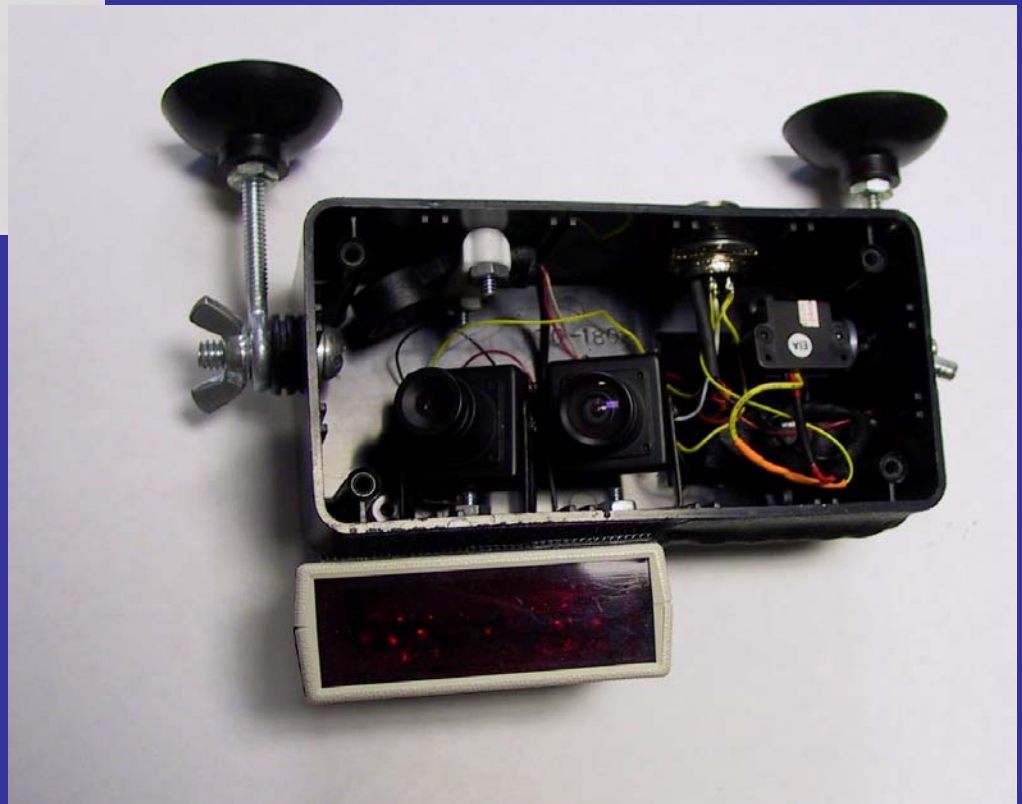
Weighted
1995-1999
CDS Data

Sources of Driver Distraction

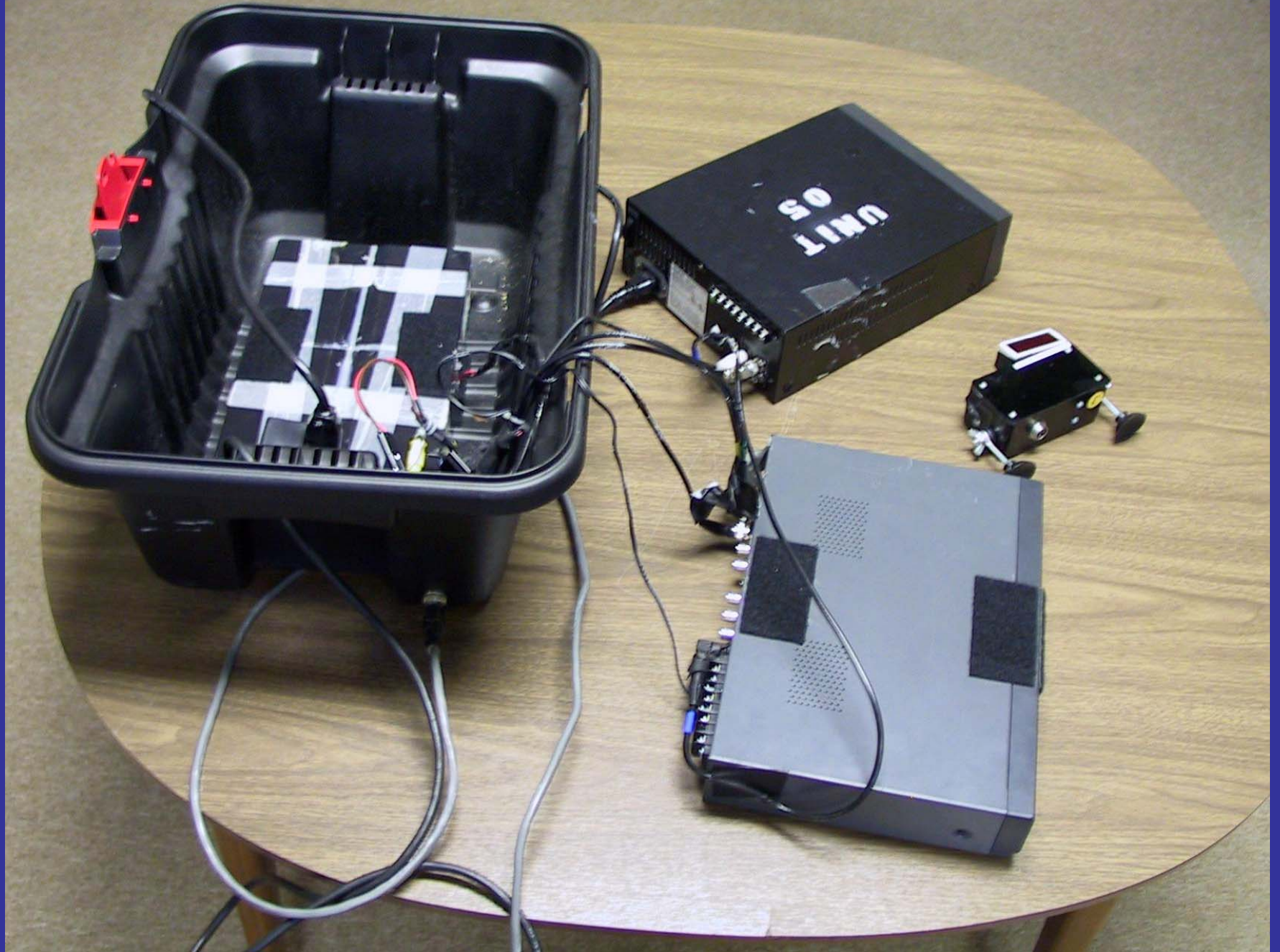
Outside object, person, event	29.4%
Adjusting radio, cassette, CD	11.4
Other occupant in vehicle	10.9
Moving object in vehicle	4.3
Using other device or object	2.9
Vehicle / climate controls	2.8
Eating / drinking	1.7
Using/dialing cell phone	1.5
Smoking related	0.9
Other	25.6
Unknown distraction	8.6

Phase II - On-road Driving Data

- Installed video recording equipment in cars of volunteer subjects
- 2 sites - North Carolina, Pennsylvania
- 70 subjects total
- 5 age categories, equal male and female
- Coded 3 hours of data per subject using VideoPro software









Taxonomy of Driver Distractions

Cell phone / pager

Eating / drinking

Radio / tape / CD

Smoking

Other occupants

Reading

Grooming

External events

Internal events

Contextual Variables

Occupants in vehicle (number, age)

Light conditions (light, gray, dark)

Weather conditions (good, bad)

Travel lanes

Traffic level (light, moderate, heavy)

Intersection

Vehicle movement (stopped, moving)

Vehicle turning

Outcome Measures

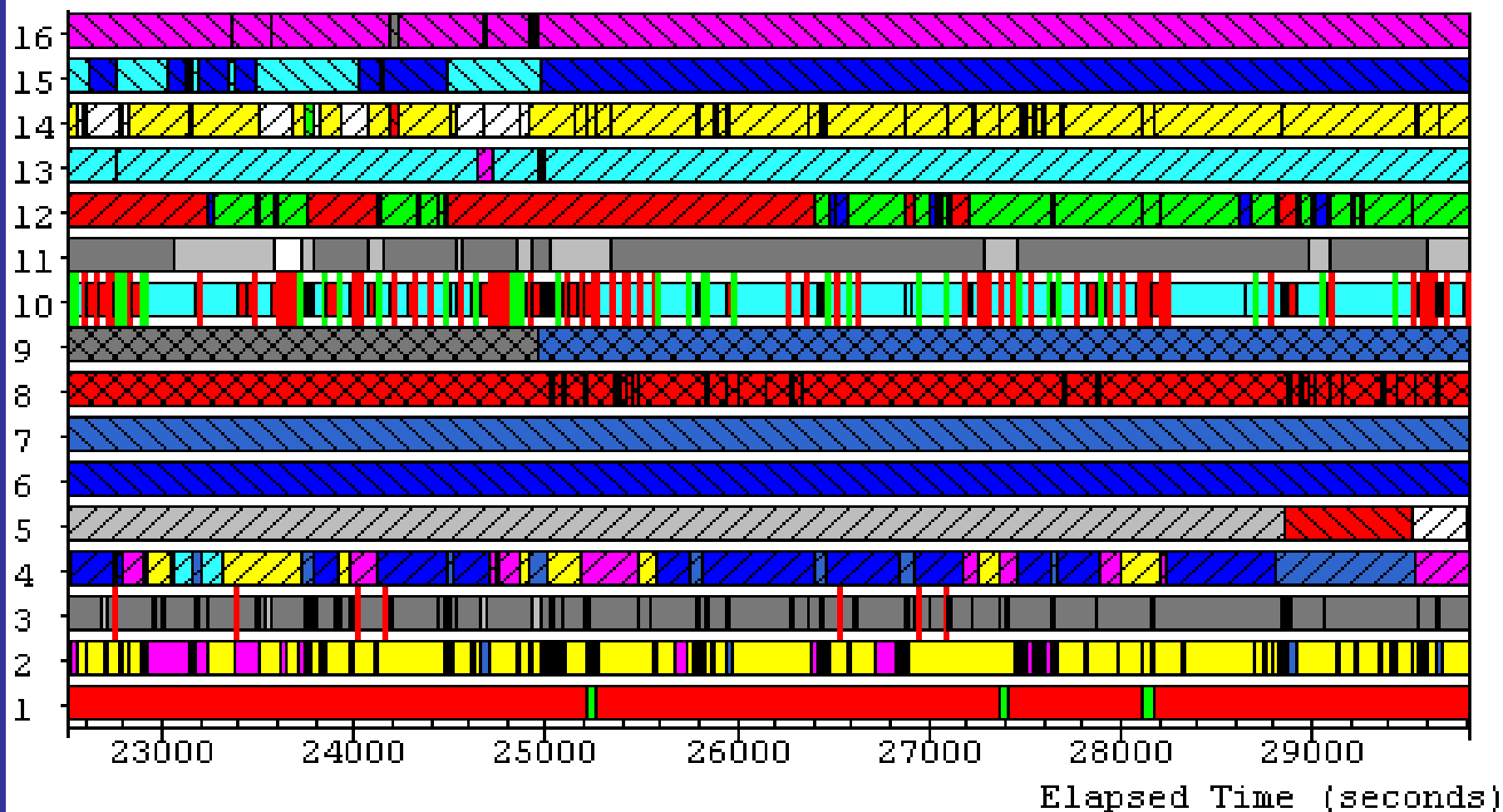
Hands on steering wheel

Eyes on roadway / driving task

Vehicle position in travel lane

Sudden braking

. . . But no measure of cognitive demand

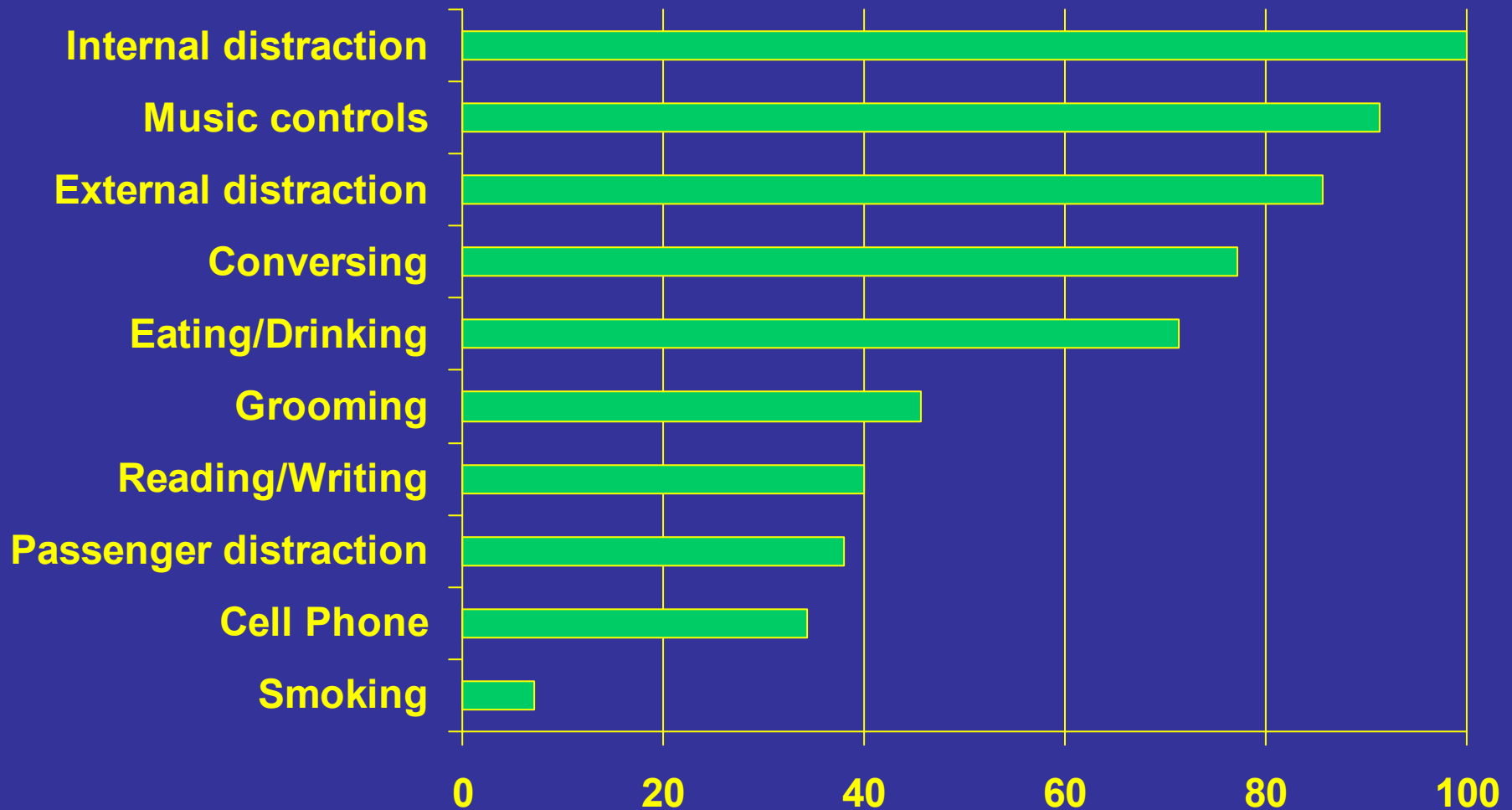


Sample Coding Output

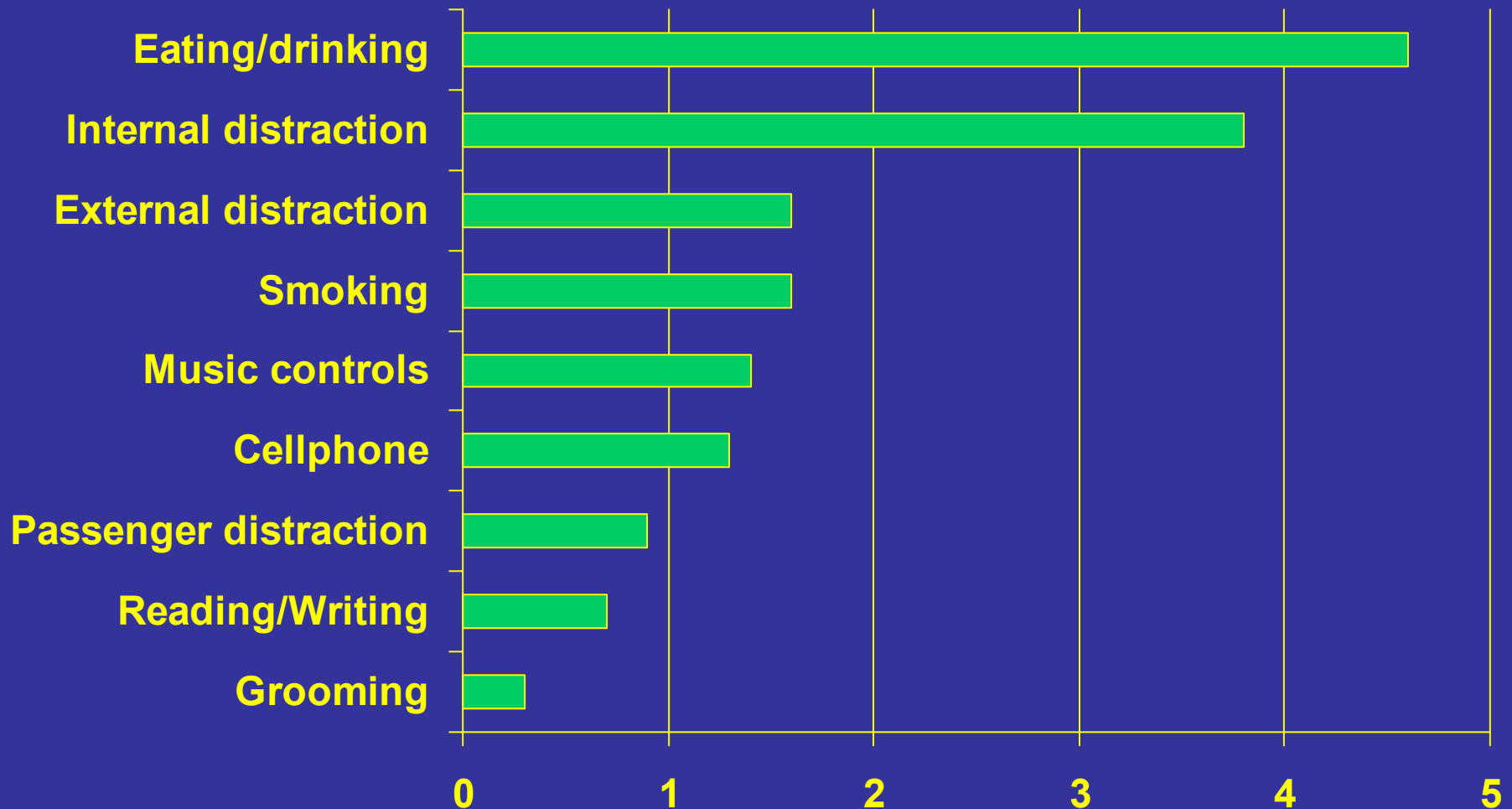
Research Questions

- How often drivers engage in behaviors that might be distracting
- Under what conditions drivers engage in such behaviors
- Differences among drivers by age and gender
- Relative severity of consequences of these behaviors

% of Subjects Affected by a Potential Distraction When Vehicle Was Moving



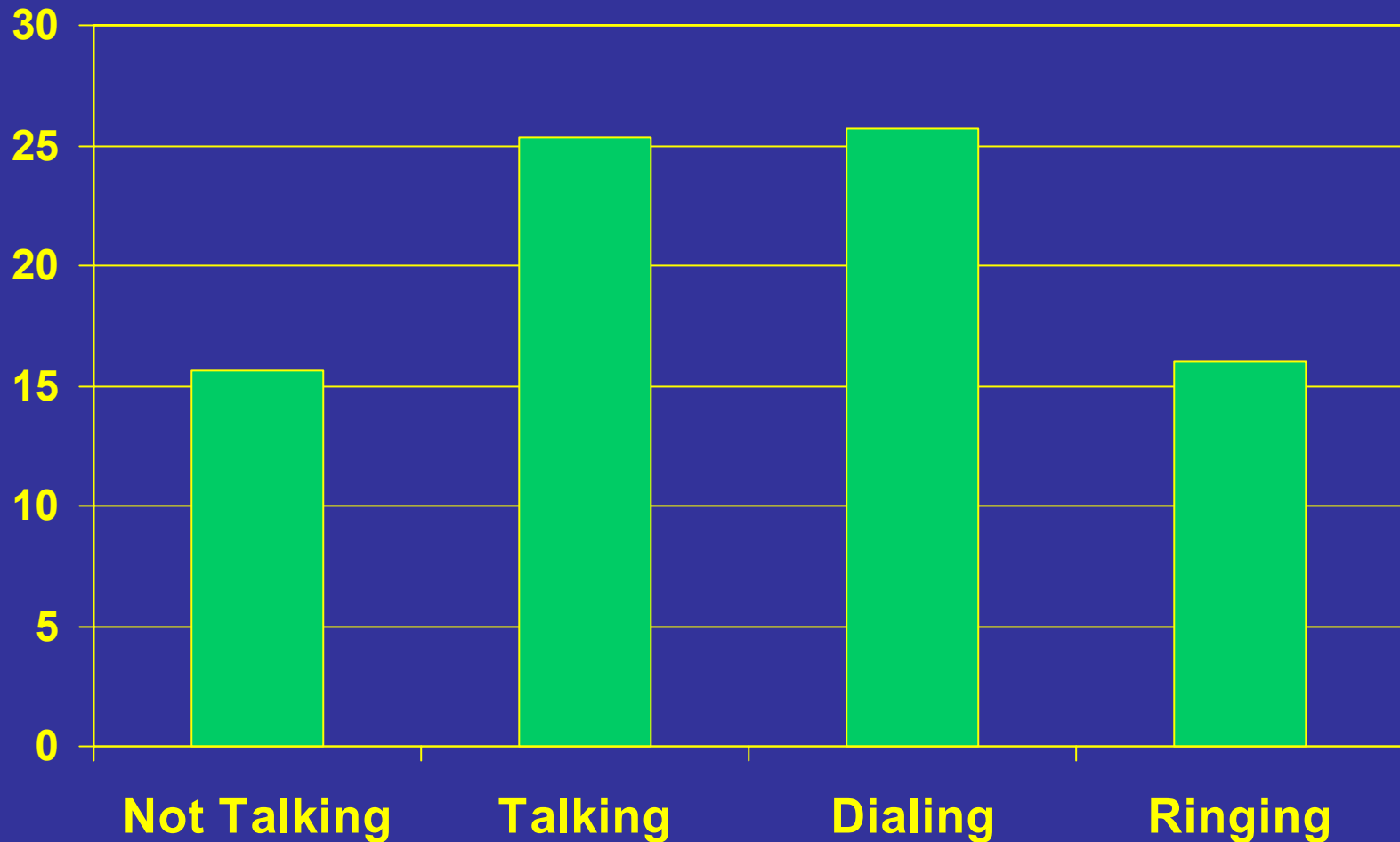
% of Total Time While Driving Engaged in a Potentially Distracting Activity



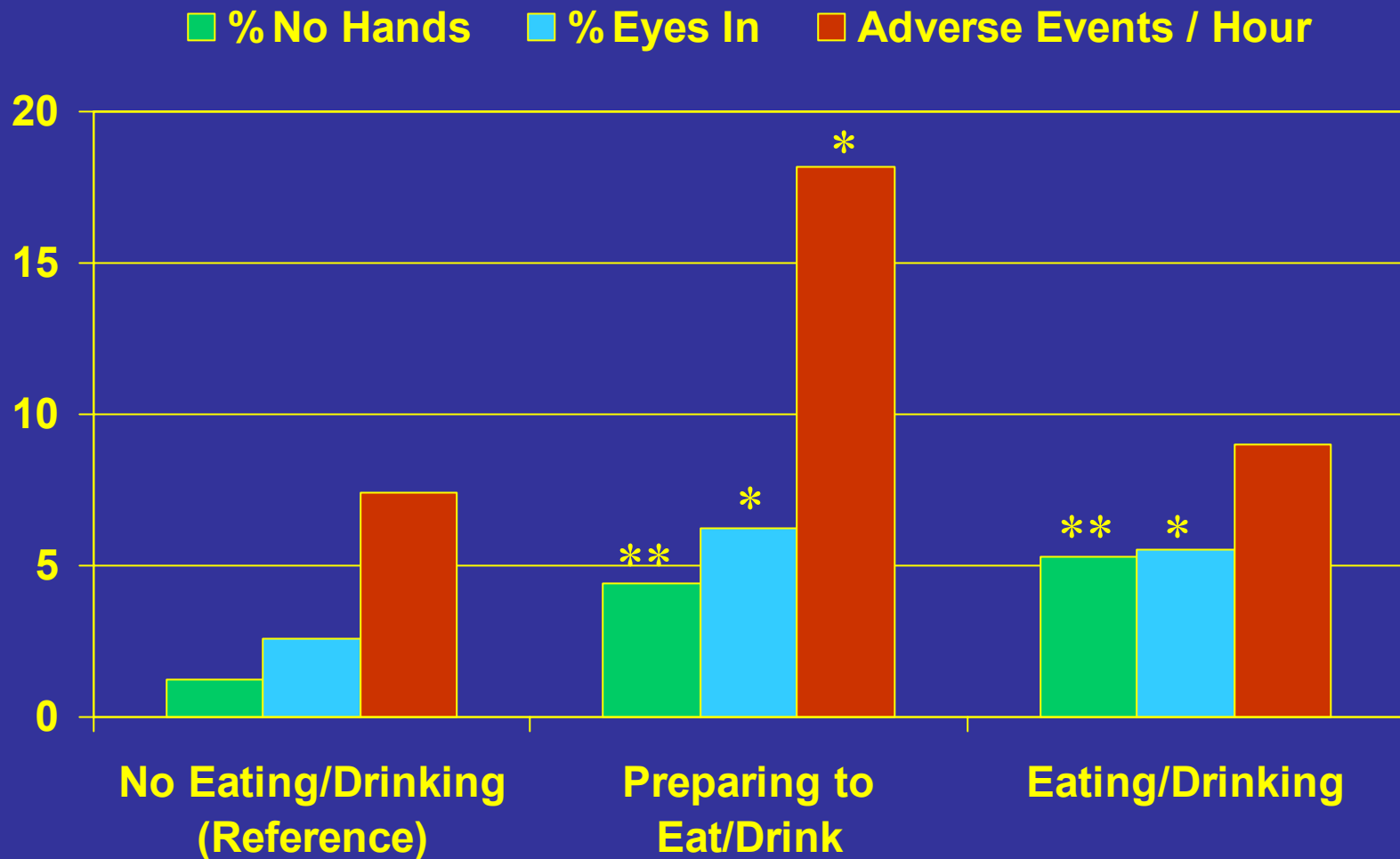
Descriptive Results - Cell Phone Use

	# Events	Total Duration (min.)	Average Duration (sec.)	Min. Duration (sec.)	Max. Duration (sec.)
Talking	100	154.4	92.7	1.2	1264.2
Dialing	122	26.1	12.9	1.0	65.7
Ringing	15	2.0	7.9	1.3	19.7

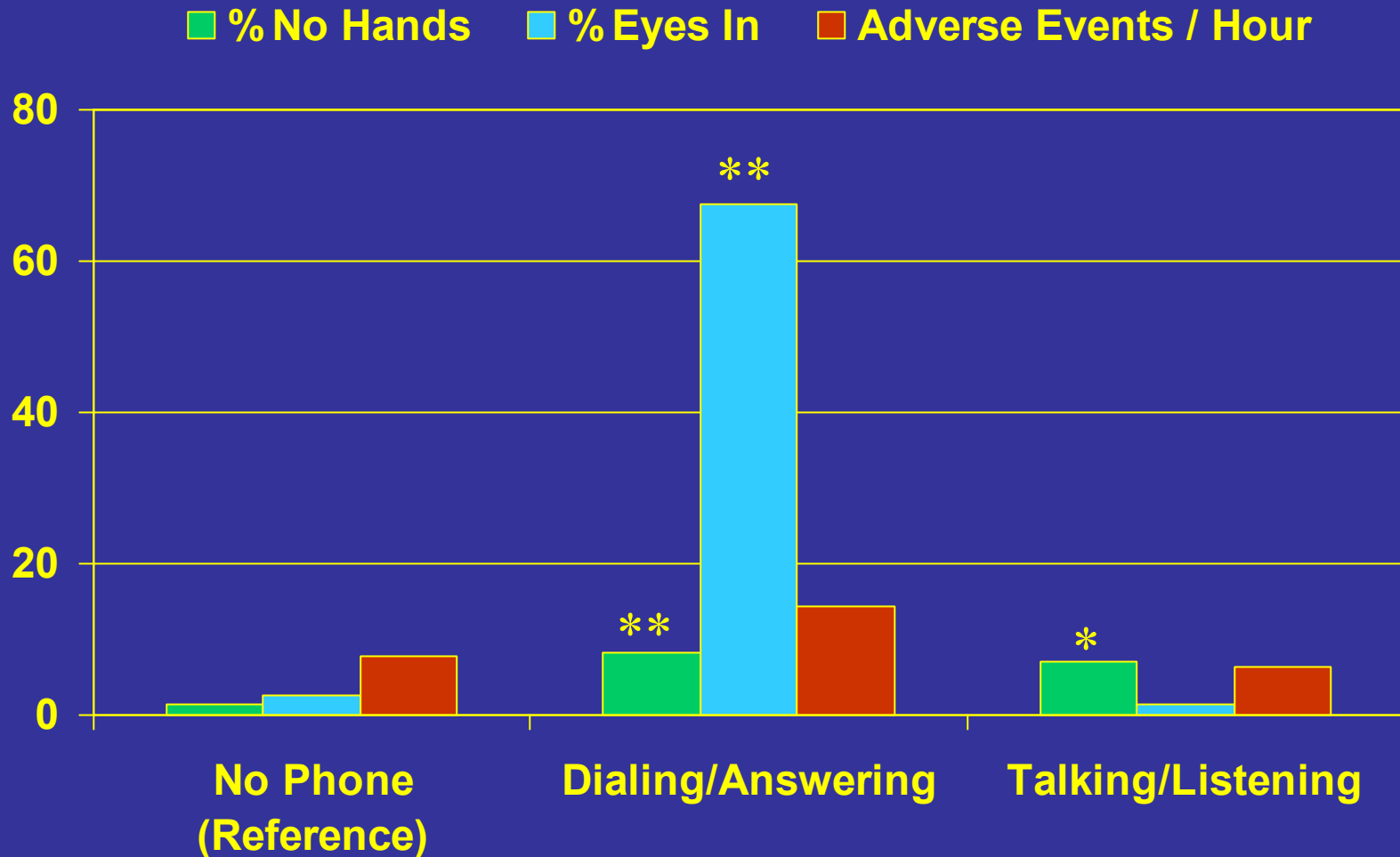
% of Time Vehicle Stopped When Using Cell Phone



Eating and Drinking Effects on Driving Performance

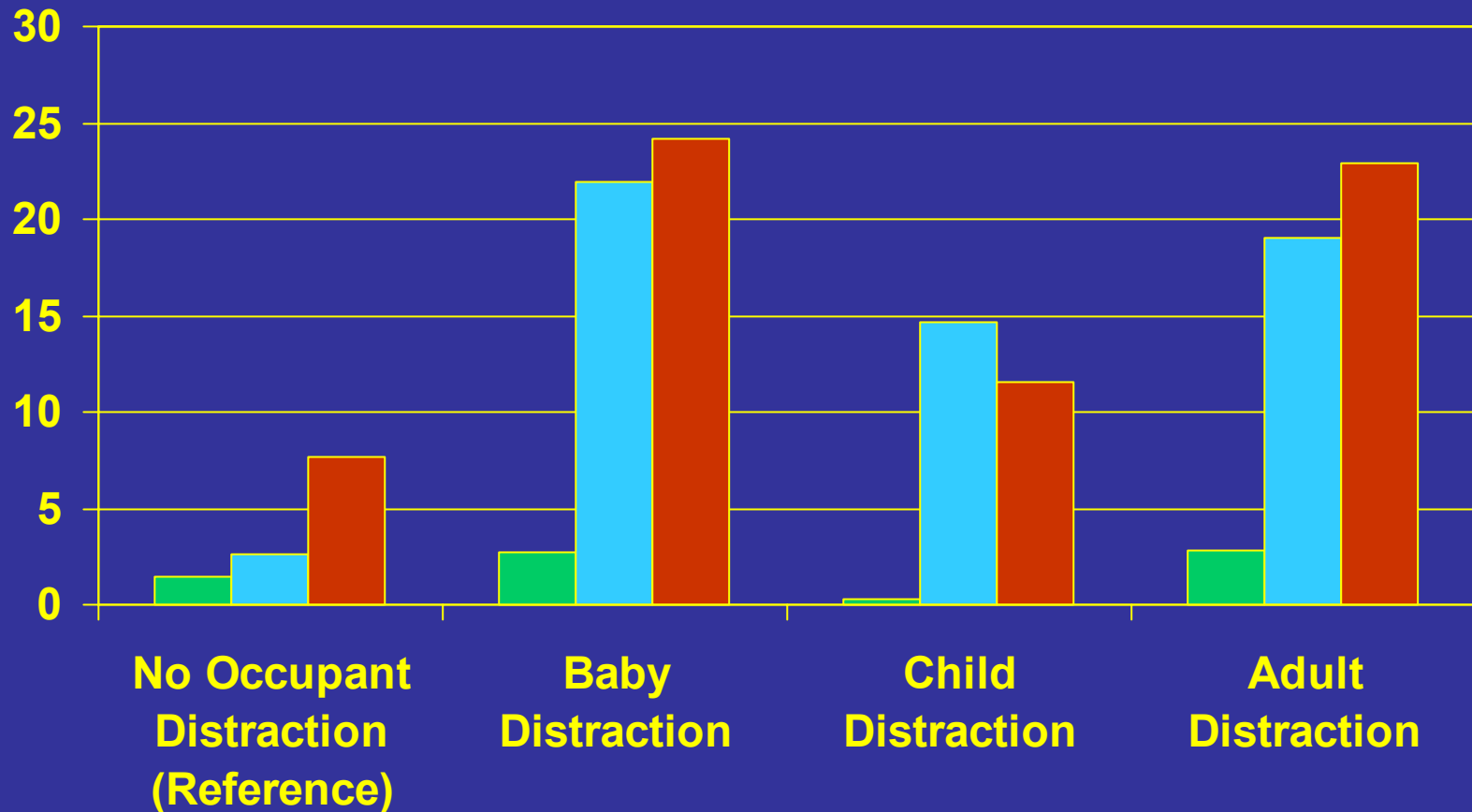


Cell Phone Use Effects on Driving Performance



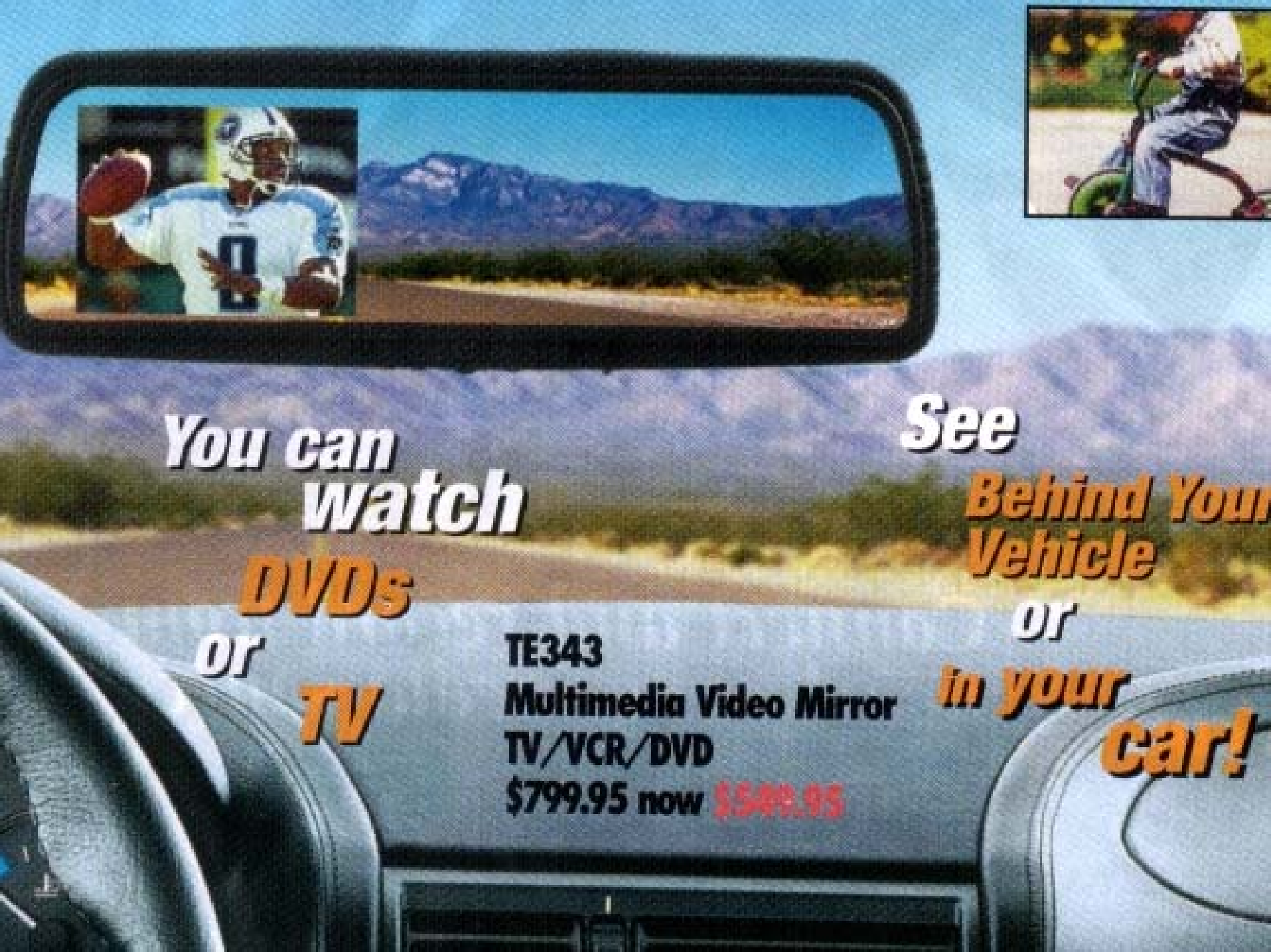
Other Occupant Effects on Driving Performance

■ % No Hands ■ % Eyes In ■ Adverse Events / Hour



Conclusion

As estimated 1.2 million crashes occur each year in the U.S. because of distracted or inattentive drivers. With all of the many new technologies that future vehicles will afford, learning how to safely manage current everyday distractions is of critical importance to the safety of our roadways.



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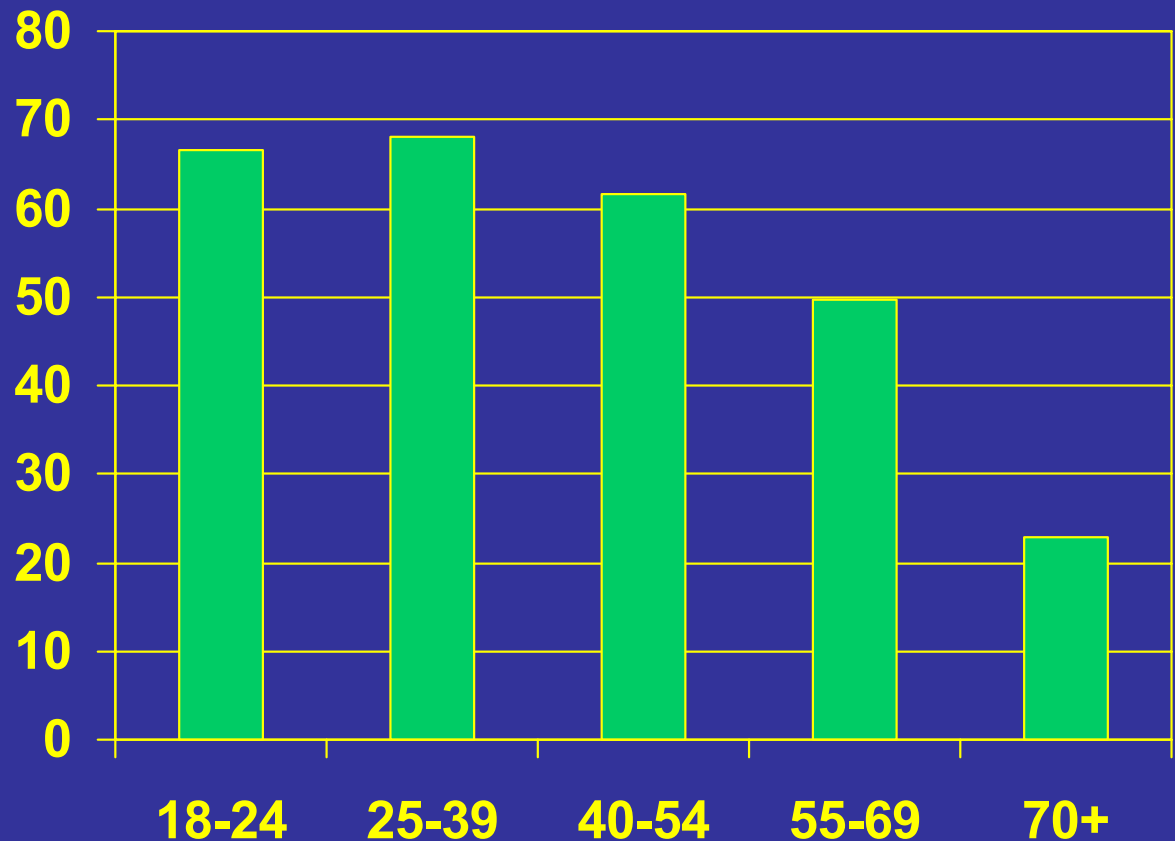
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SOME IDIOT TALKING
ON HIS CELL PHONE
GOT CREAMED

9304

Percent Using Cell Phone While Driving by Age

Adjusted %
using cell
phone while
driving: 58.8%



Identification and Analysis of Cell Phone Crashes

- Computerized search of NC crash report narratives from January 1996 through August 2000
- Search words: answer, carphone, cell, dial
- Narratives read to determine their relevance
- 452 cell phone crashes identified
 - 0.04% of all crashes (an underestimate)
 - Increased from 0.01% in 1996 to 0.15% in 2000

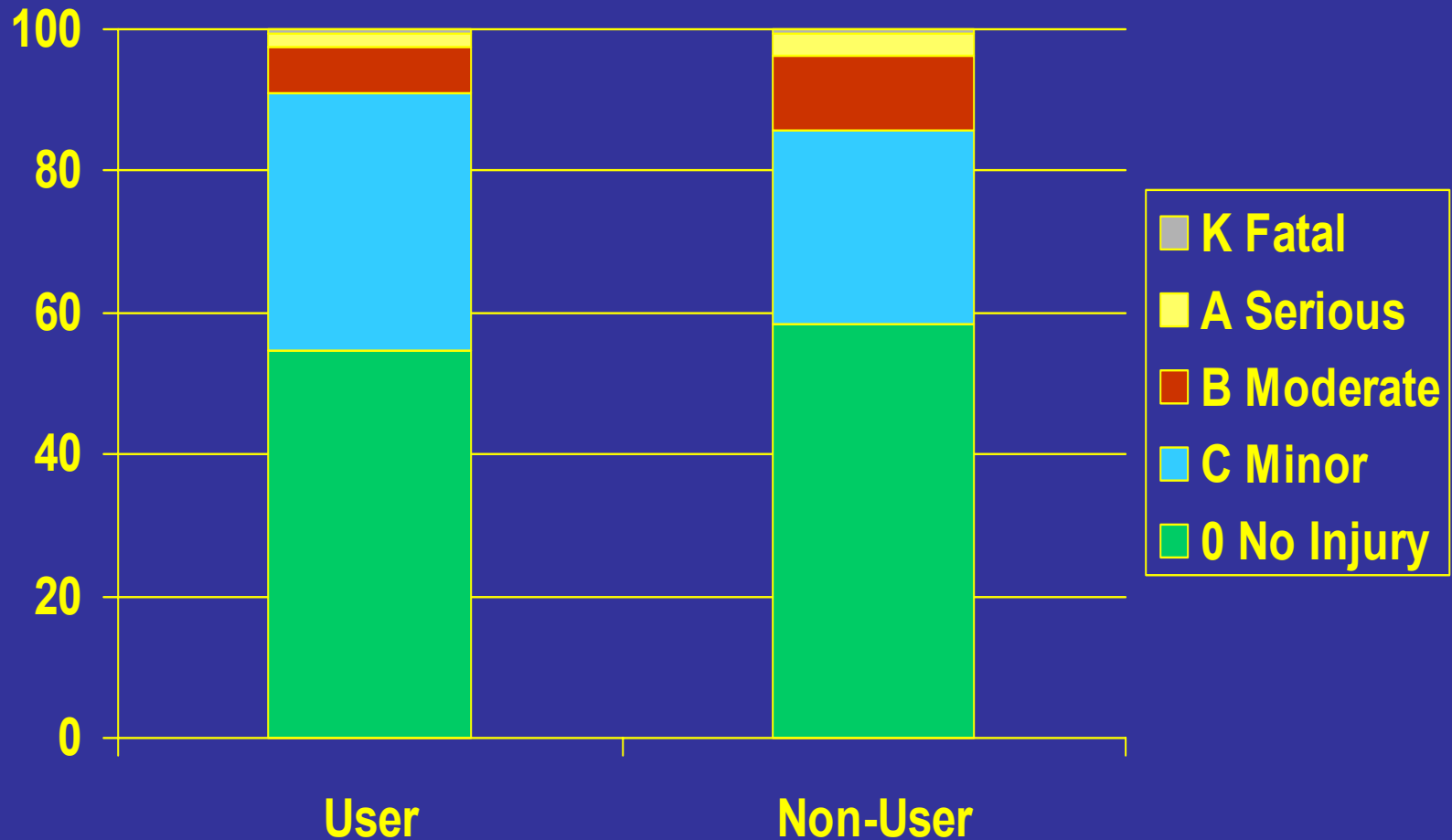
Sample Narratives

- Driver 1 bent down to answer car phone and ran into back of Veh. 2 which knocked Veh. 2 into rear of Veh. 3.
- Driver 1 stated that he ran off the roadway while trying to reach for his cell phone.
- (Not used) Driver 1 stated that she had just got out of the eye doctors office and her pupils were dialated and she ran the red light.

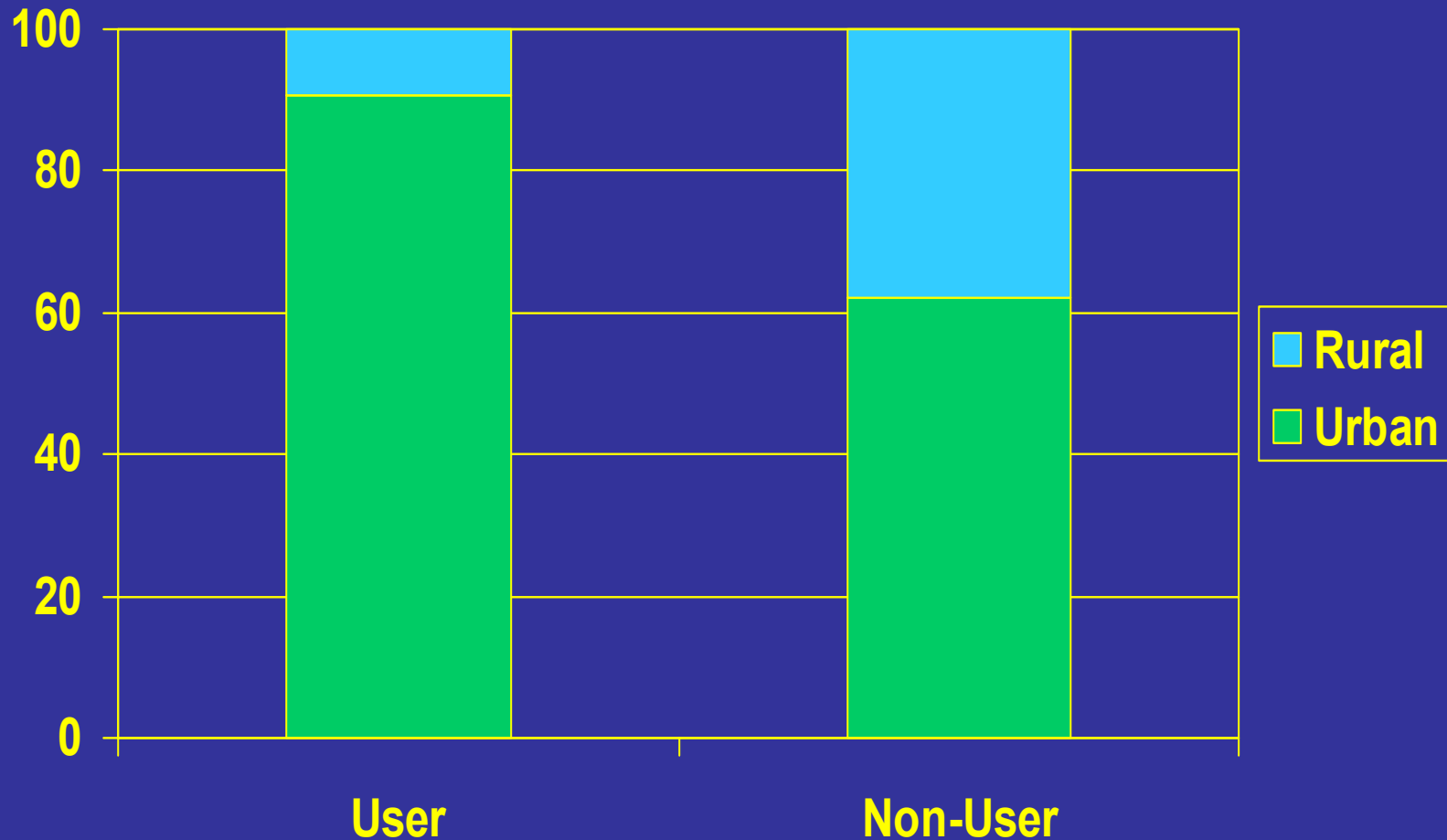
Data Limitations

- Search terms may have missed some narratives.
- Drivers may not admit they were using a cell phone.
- Officers may not ask about cell phone use.
- Extent of underreporting is not known.
- Hand-held vs. hands-free is not known.

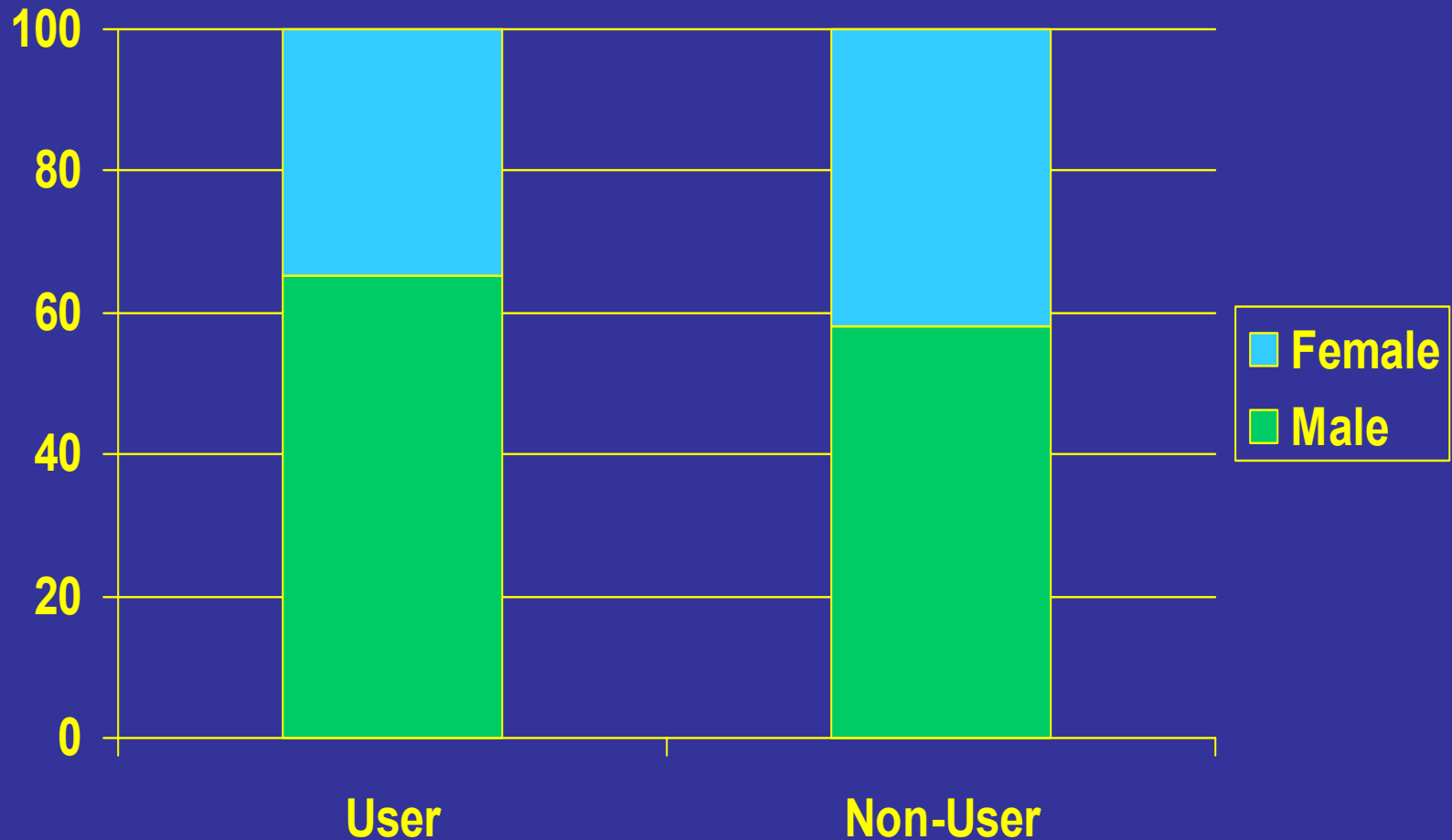
Crash Severity for Cell Phone Users vs. Non-users



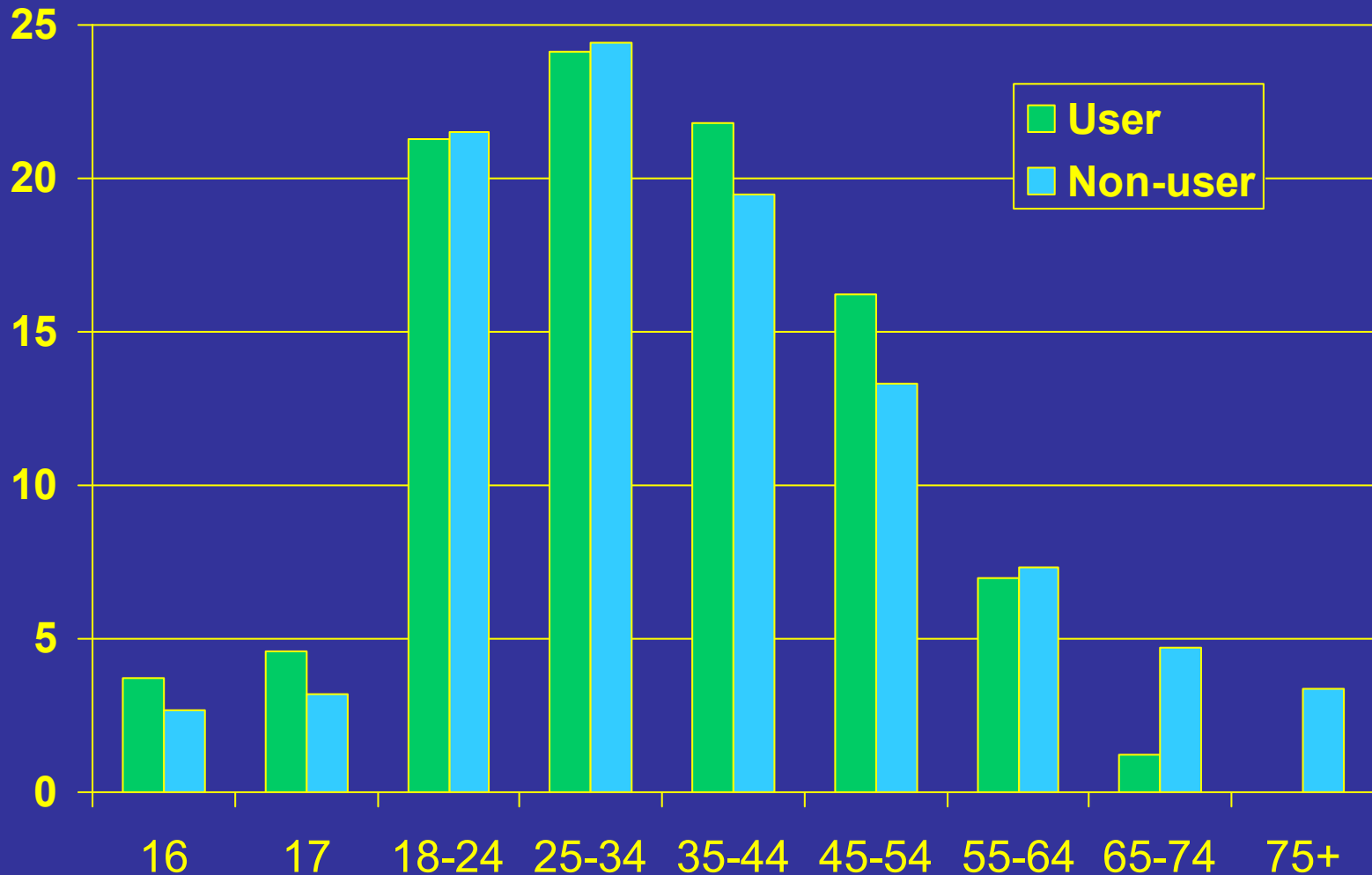
Urban vs. Rural Crashes for Cell Phone Users vs. Non-users



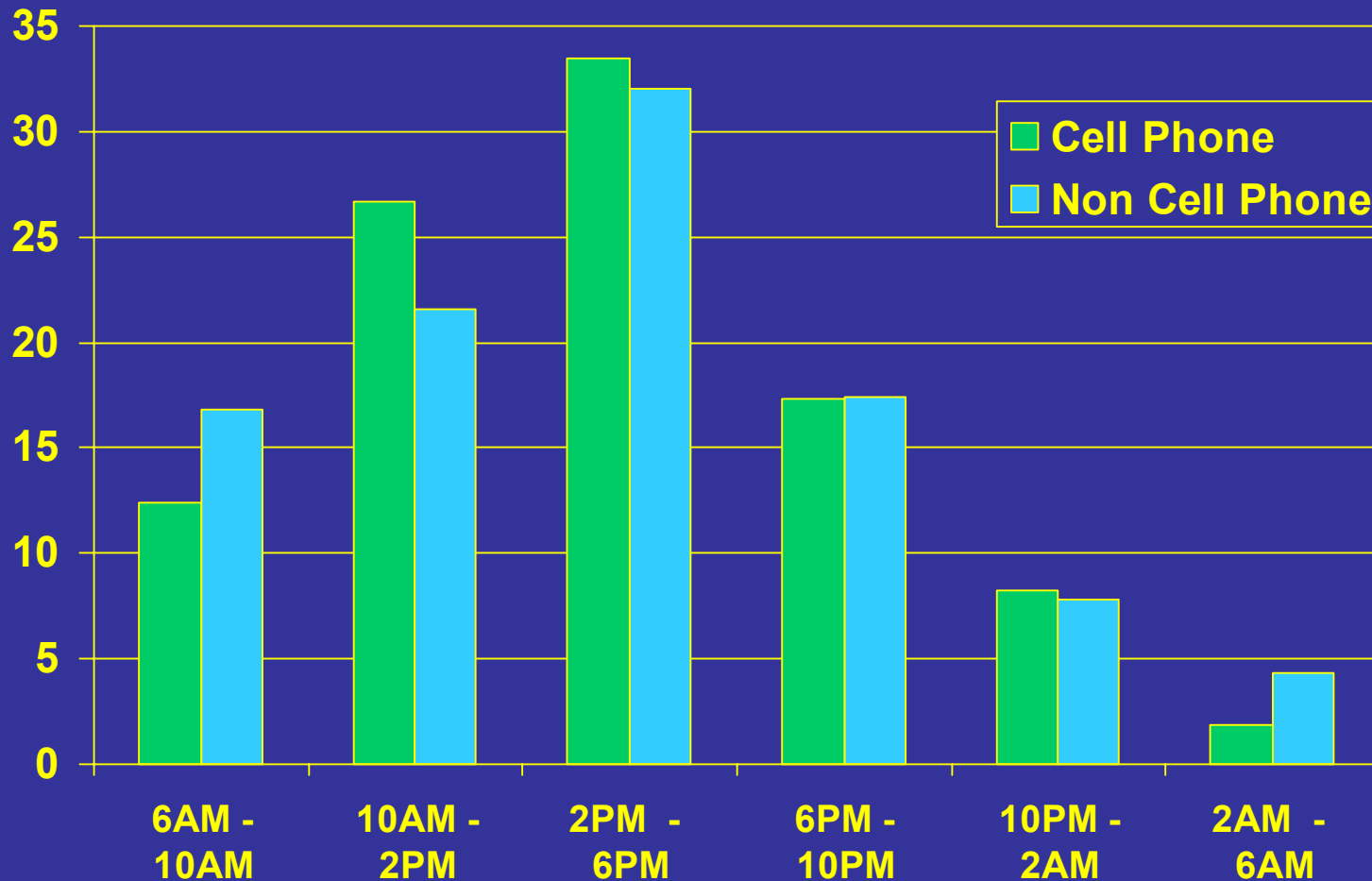
Gender of Cell Phone Users vs. Non-users in Crashes



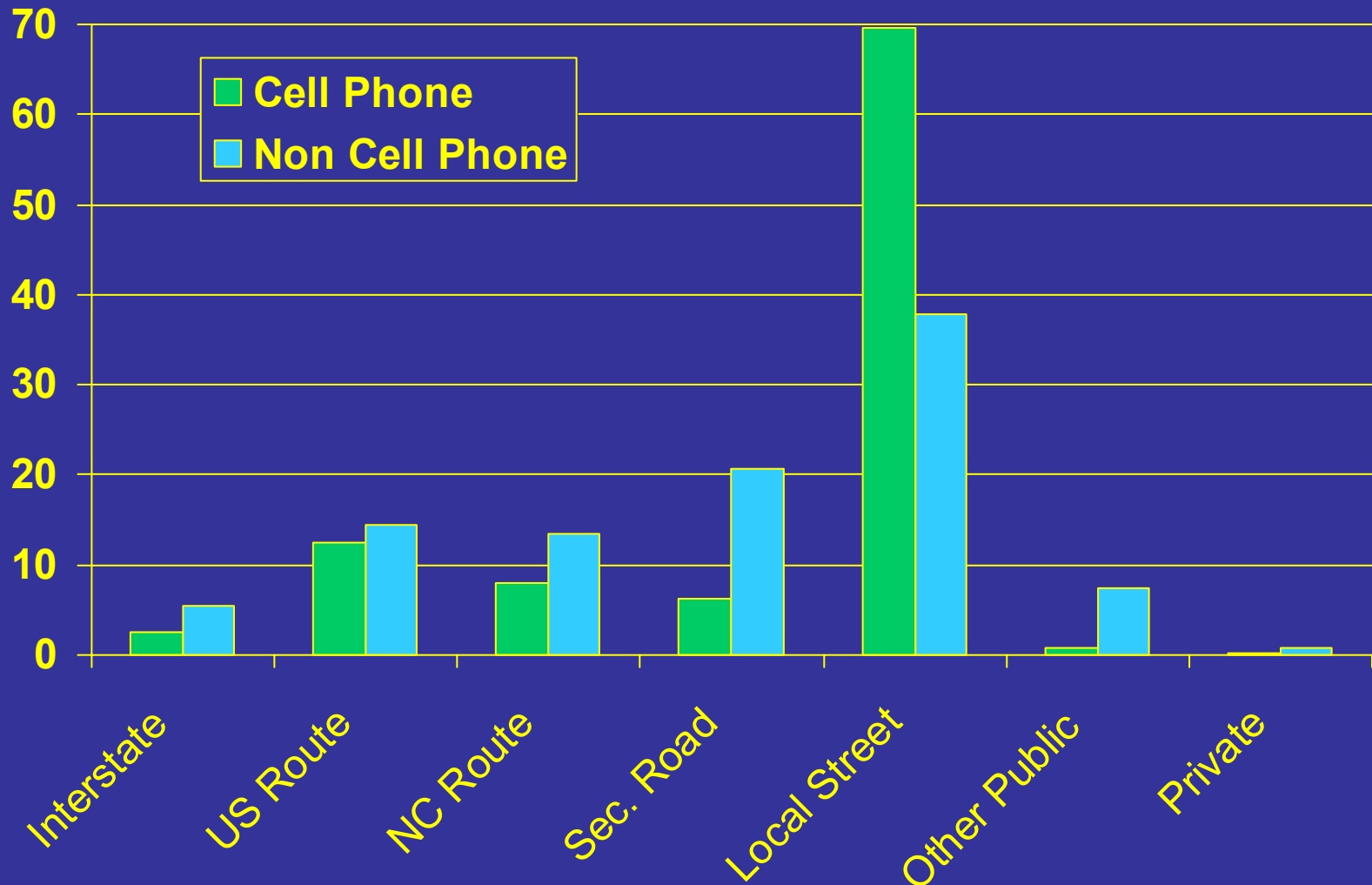
Age of Cell Phone Users vs. Non-users in Crashes



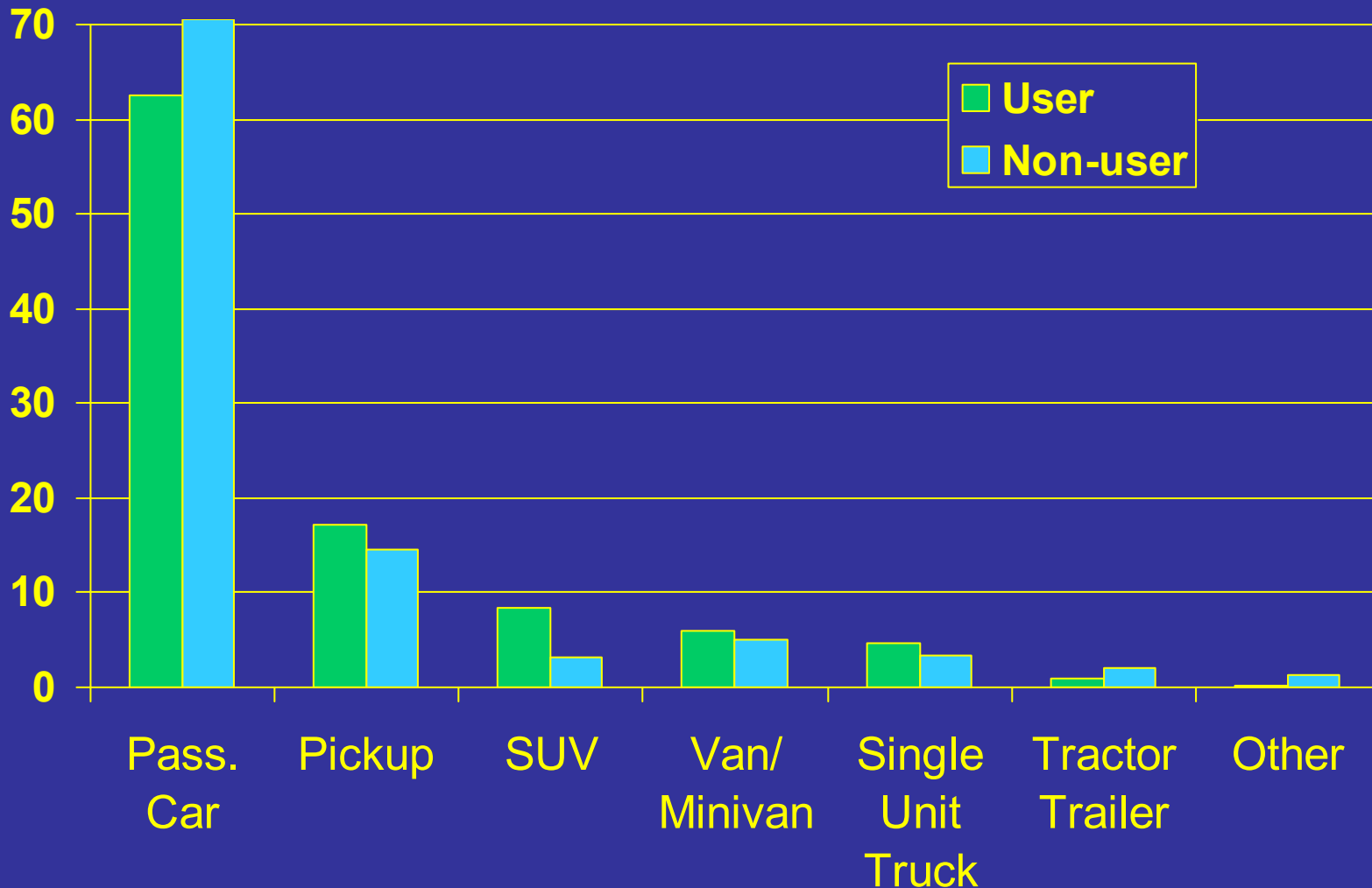
Time of Day of Cell Phone vs. Non Cell Phone Crashes



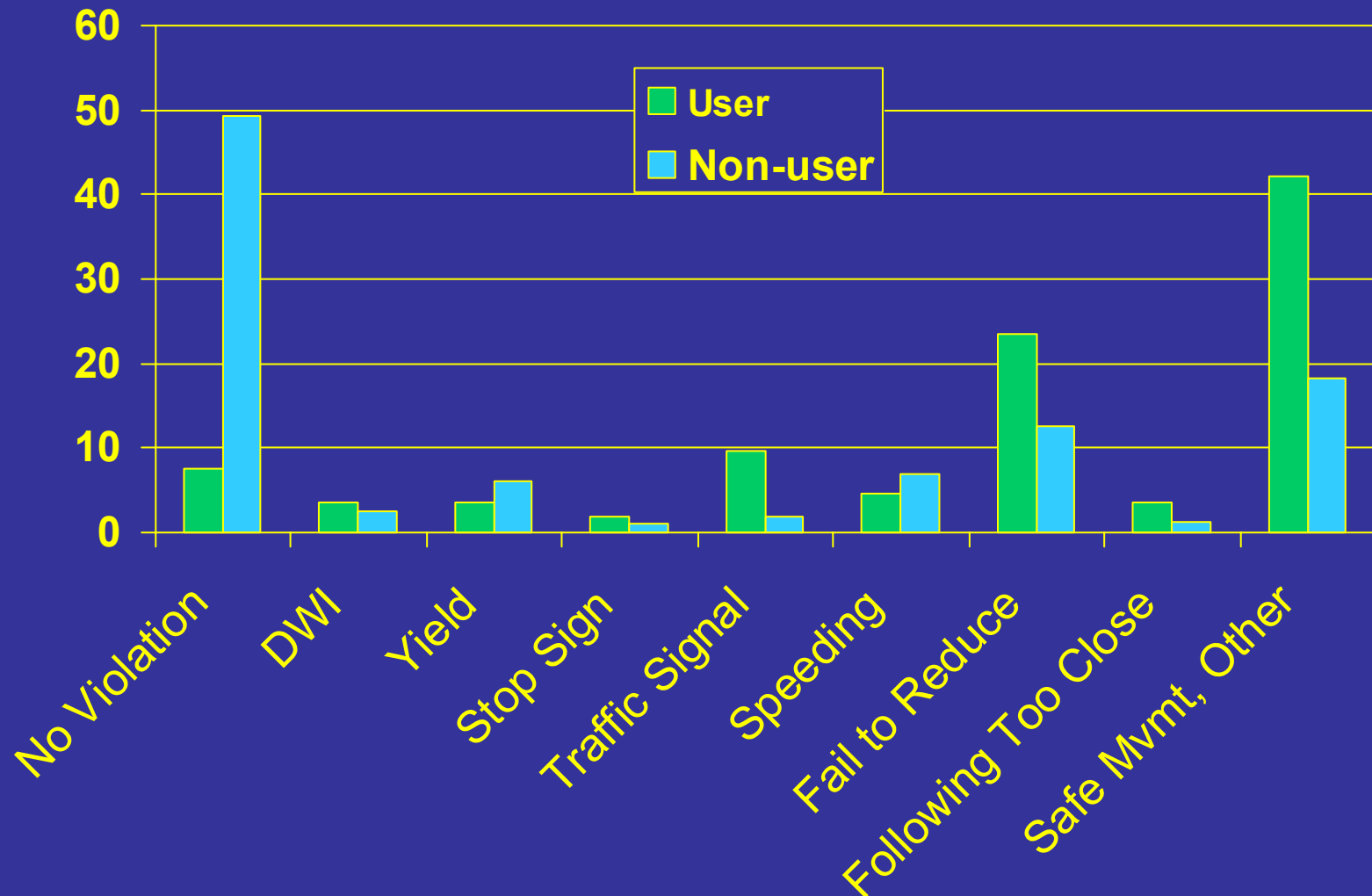
Road Class for Cell Phone vs. Non Cell Phone Crashes



Vehicle Type for Cell Phone Users vs. Non-users



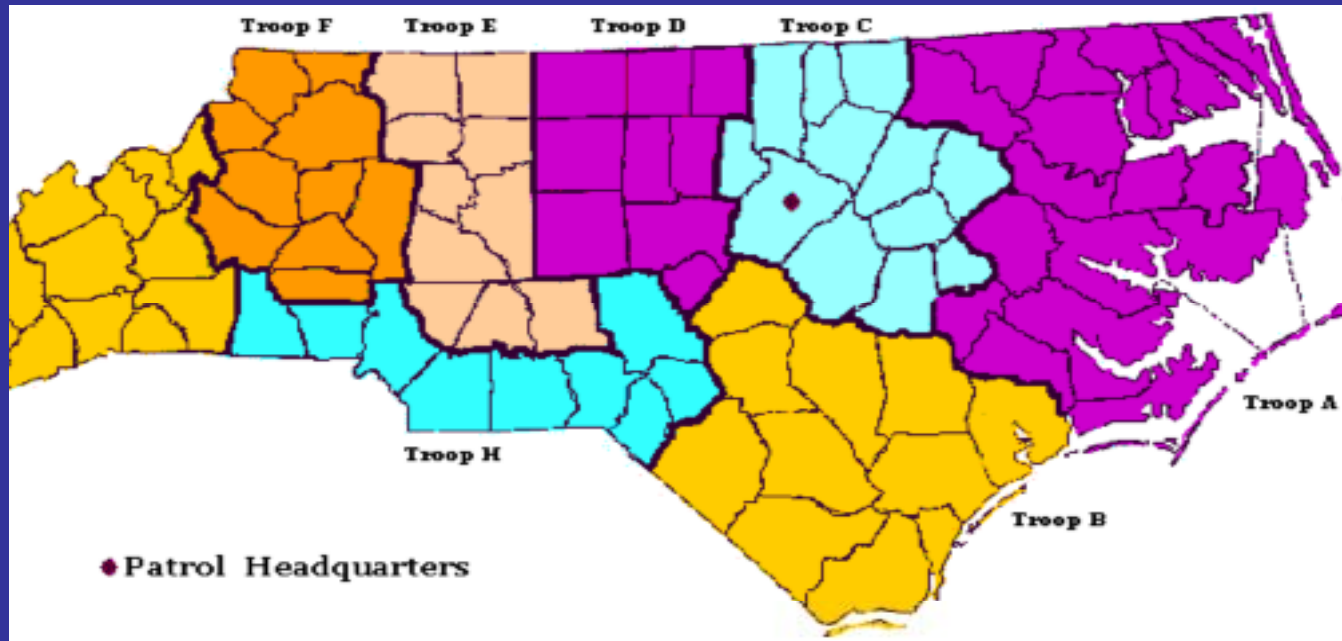
Violations for Crash-involved Cell Phone Users vs. Non-users



Summary of Findings

- Cell phone crashes more likely to occur:
 - On local roads and in urban areas
 - During mid-day or early afternoon hours
- Drivers involved in cell phone related crashes are more likely to be:
 - Ages 35-55
 - Male
 - Driving sport utility vehicles
 - Cited for failure to reduce speed or traffic signal violations

Special Data Collection by NC State Highway Patrol



- All 8 NC SHP districts participating
- Two-month data collection period, May 15 - July 14, 2002

Descriptive Results

- 29 cell phone crashes statewide over the 2-month data collection period
 - Only 1 hands-free phone
 - Predominantly occurred while talking on phone (9 crashes), followed by reaching for phone (5 crashes), dialing (4 crashes) and answering phone (3 crashes)
 - 86% very significant, 14% somewhat significant in causing crash
 - Information most often volunteered by driver, but officers also questioned driver.

Cell Phone Crash Projections

- 29 cell phone crashes statewide over a 2-month period

Translates to 174 crashes annually

- But only 11.8% of cell phone crashes statewide reported by NC SHP.

1,475 projected crashes annually

Full report can be accessed at:

<http://www.hsrb.unc.edu/>

Thank You!